

## BOTTLE-LIKE CONTAINER

## SPECIFICATION

[0001] The invention concerns a bottle-like plastic container.

[0002] PCT/DE03/00457 proposes a bottle-like or pouch-like plastic container in which at least one chamber is separated from a second chamber, especially by a seam that can be broken. A container of this type is used especially for the separate storage of two components, especially two components of a food, for example, a baby food, which are to be mixed before being consumed. After the breakable seams that separate the chambers have been broken, the components are easily mixed by squeezing or kneading the container.

[0003] The pouch-like design of a container described in PCT/DE03/00457 is unproblematic. However, in the case of the bottle-like design of a container that is described there, the stability is adversely affected by chambers that break off at a seam, and other design measures are proposed there, by which the stability can be increased. Furthermore, the buckling resistance is also often insufficient, especially where relatively tall containers are concerned, for example, containers with chambers that lie one above the other. Therefore, the cited document further proposes that a tube that extends essentially centrally be inserted in the container to increase both the buckling resistance and the stability of the container.

[0004] With these technical problems in mind, the objective of the invention is to make available a bottle-like plastic container with a simple geometry and a simple design that already has sufficient stability and sufficient stiffness to resist buckling.

[0005] To solve these technical problems, a bottle-like plastic container in accordance with Claim 1 is characterized by the fact that each of at least two chambers that are arranged side by side has a base part, and that preferably a third chamber separates the two adjacent chambers by seams that can be broken at least in certain sections.

[0006] The two chambers arranged side by side, each of which has a base part, give the bottle-like container of the invention a great deal of stability and a pleasing appearance, since, for example, a chamber can no longer break off at seams. The mixing of the contents of the preferably three chambers is also simplified, since relatively long breakable seams are normally provided over a maximum cross section, so that the components can be mixed without having to pass through cross-sectional constrictions.

[0007] It was found to be advantageous to provide the base parts with a pointed-oval design, as viewed from above, and to arrange them with the points of the ovals directed towards each other, especially abutting at the points, and the base parts are preferably formed by a single-piece base. These measures allow simple, unbreakable welding of a single-piece front face and a single-piece rear face with the plastic base parts, and the adjacent points of the pointed-oval base form a node, in which marginal, unbreakable seams of the container meet internal, breakable seams.

[0008] The container can be designed in such a way that the third chamber completely separates the two chambers that are arranged side by side. In this case, only two breakable seams or two breakable seam sections are provided, by which the three chambers are breakably separated from one another. In this regard, in a first alternative, the third chamber can also be provided with an inserted base part, which is likewise formed as a pointed oval and can be designed as a single piece with the base parts of the two chambers that are arranged side by

side. With this measure, the third chamber can also be designed with a relatively large volume.

[0009] In this regard, it was also found to be advantageous to provide especially the third chamber with an, e.g., reclosable spout, or an opener tab or the like that can be broken off or cut off to allow removal of the final product resulting from the mixing of the individual components.

[0010] If only a small volume is needed for the third chamber, it can be designed to taper to a point in the direction of the base parts of the adjacent chambers.

[0011] In a further design modification, this point and the two facing points of the base parts of the adjacent chambers can come together in a node, or the point of the third chamber can continue in another seam. This additional seam likewise breakably separates the two chambers that are arranged side by side and again comes together with the two facing points of the two base parts of the adjacent chambers, especially in a node. As viewed from the side, the breakable seams then form a more or less Y-shaped structure.

[0012] In another variant of the bottle-like container of the invention, the point of the third chamber meets a point of a fourth chamber. If the fourth chamber additionally has an especially pointed-oval shape, the third and fourth chambers can then form a structure similar to an hourglass.

[0013] The filling and emptying of the container of the invention can be simplified by the following measure: directly adjacent chambers are each closed at the top on the side opposite the base parts by a section of a molded part that has a boat-like shape in a top view and thus have essentially the same top view as the base parts, but these boat-shaped sections are generally smaller. These boat-shaped sections can be provided with suitable openings for

filling purposes or merely to keep the individual chambers open, and openings of this type are sealed after the chambers have been filled or are used as spouts.

[0014] It is advantageous for the container of the invention to be formed symmetrically with respect to a center plane. The production and filling of a symmetric container are relatively simple compared to perfectly possible complex structures, since, for example, distances from the center plane are formed the same.

[0015] To increase stability, a container can be designed in such a way that at least one chamber is closed by a base part, that the base part has a filling hole, and that the base part rests on a stand.

[0016] A high degree of stability is provided by the formation of a stand, which is provided with a sufficient support surface and sufficient weight to meet requirements. This is the case especially if all of the chambers have base parts that rest on a common stand, which, in a preferred embodiment, has a base plate that extends freely at least in some sections.

[0017] Moreover, with this type of arrangement of the base parts, the individual chambers are filled through the filling holes of the base parts from one direction, from the base side. To this end, it can be advantageously provided that a filling hole extends completely through the stand, especially all of the filling holes. After the chambers have been filled, filling holes of this type are sealed by vibration or similar method.

[0018] The base parts and the stand can be formed by separate molded parts, which, for example, can be adhesively bonded or welded together. Alternatively, the base parts and the stand or stands can also be formed as single pieces, which can reduce production costs.

[0019] In a further design modification, a cylindrical stem is arranged between the stand and a base part. A stem of this type is easily gripped and held by a tong-like gripping

device, for example, for filling the container.

[0020] In this regard, it has additionally been found to be advantageous if the stem has a recessed cross section relative to the corresponding base part, so that, for example, a well-defined and readily apparent holding section for a gripping device is provided.

[0021] To this end, it is advantageous for the stem to be free of a plastic film that bounds a chamber.

[0022] In a further modification of the invention, the base parts are arranged in a row. Seated, for example, on a common stand in the form of a base plate, the base parts can then have an elongated oval design.

[0023] In a further design variant, the base parts are spaced apart with respect to their peripheral edges and consequently are formed independently of one another.

[0024] In a further modification, it can be provided that the base parts have a wedge-like shape in a top view, such that, in particular, points of adjacent base parts that taper like a wedge face each other. This design makes it possible for two films that bound the chamber(s) in the front and rear to be joined at the points and to arrange the breakable seams there in such a way that they join an outer, peripheral, unbreakable seam.

[0025] In this regard, it can be further provided that adjacent points of the tapering wedge-shaped base parts are connected with each other. In this way, for example, by welding through, reliable, liquid-tight adhesive bonding and/or welding is made possible, even where the seams come together at nodes.

[0026] If the base parts are radially separated from each other, an additional web can be used to join the base parts. For one thing, this results in a further increase in stability, and for another, the web can be provided with an adapter for a gripping device to be used while filling

the container.

[0027] In another embodiment of the container, three chambers are provided, wherein the chambers have a triangular shape, as viewed from the side. A middle chamber has a vertex that points in the direction of the stand and is closed by the base part, and the two outer triangular chambers adjacent to the middle chamber are formed with their vertices directed away from the stand and resting against the middle chamber.

[0028] In particular, in this type of embodiment of the container, the middle chamber has a relatively long upper side. For this reason, on its side opposite the base part, the middle chamber preferably has an insert designed as a spout. Here again, a spout of this type preferably has a wedge-shaped design, as viewed from above.

[0029] Alternatively, a filling hole can also be used for removing the contents of the container. In this regard, it is preferred that an intermediate piece that closes all but one of the filling holes be provided between at least two base parts and a base plate.

[0030] A base plate of the stand can then be designed as a closure of a hole that connects a spout with the one filling hole of a base part that remains open.

[0031] The bottle-like container of the invention is explained in greater detail with reference to the drawings, which schematically illustrate only some specific embodiments.

[0032] Figure 1 shows a first embodiment.

[0033] Figure 2 shows a second embodiment.

[0034] Figure 3 shows a third embodiment.

[0035] Figure 4 shows a fourth embodiment.

[0036] Figure 5 shows a fifth embodiment.

[0037] Figure 6 shows another container in an exploded view.

[0038] Figure 7 shows an isometric drawing of the container of Figure 1.

[0039] Figure 8 shows another embodiment.

[0040] Figure 9 shows an isometric drawing of two base parts joined by a web.

[0041] Figure 10 shows an isometric drawing of a stand.

[0042] Figure 11 shows a cross section of two base parts joined by a web.

[0043] Figure 12 shows a cross section of a connecting piece.

[0044] Figure 13 shows a cross section of a base plate.

[0045] Figure 1 shows a specific embodiment of a bottle-like container 1 of the invention. Two chambers 2, 3 are arranged side by side, each of which has a base part 4, 5, which results in a large, stable support surface for the container 1. A third chamber 6, which also has a base part, 7, separates the chambers with breakable seams 9, 10. If the seams 9, 10 break, for example, by squeezing or pressing the container 1, the contents of the three chambers 2, 3, 6 mix, and the mixed contents can be removed from the container 1 by a, for example, reclosable spout 8 in the third chamber 6, which separates the two chambers 2, 3 that are arranged side by side.

[0046] The three chambers 2, 3, 6, which are arranged side by side here, are each closed at the top by a boat-shaped section 9-11 of a molded plastic part. The reclosable spout 8 can then also be formed together with them in a simple way. Moreover, the boat-shaped sections 9-11 can be provided with openings for filling the three chambers 2, 3, 6. After the chambers have been filled -- up to the spout -- the openings are sealed.

[0047] The base parts 4, 5, 7 have a pointed-oval shape comparable to the boat-shaped sections 9-11, and the points of the base parts face each other and are arranged to make contact with each other in nodes 16, 17.

[0048] The base parts 4, 5, 7 are formed by a single-piece base. Due to the measures explained above, the unbreakable seam 14 between a film-like front part 15 and the base parts 4, 5, 7 then also meets the breakable seams 9, 10 at one of the nodes 16, 17. A similar situation exists at the top of the container 1, where an unbreakable seam 18 between the front part 15 and the boat-shaped sections 11-13 meets the breakable seams 9, 10 in nodes 19, 20.

[0049] The same applies to the rear side of the container of the invention.

[0050] In the embodiment of a container 24 illustrated in Figure 2, the adjacent chambers 25, 26 are separated by the breakable seams 27, 28 of a wedge-shaped third chamber 29. The top of the chamber 29 has a boat-shaped molded part 30 with a spout 31 that can be closed by a cap.

[0051] The base parts 32, 33 of the chambers 25, 26 are again provided with a pointed-oval shape and are arranged with the points 34, 35 facing each other. The seams 27, 28 of the chamber 29 also form a point 36 that is directed towards these two points 34, 35, so that the unbreakable seam 38 between a front part 39 and the base parts 32, 33 and the seams 28, 29 meet at a node 37.

[0052] In the embodiment illustrated in Figure 3, a third chamber 42 arranged between two adjacent chambers 40, 41 also has a point 43 that is directed towards the facing points 44, 45 of the pointed-oval base parts 46, 47 of the chambers 40, 41. However, in the embodiment in Figure 3, the point 43 continues in another breakable seam 48, which extends to the points 44, 45 and breakably separates the chambers 40, 41.

[0053] The chamber 42 does not have a boat-shaped molded part with a spout, but rather a continuous unbreakable seam 49 is provided, which closes the tops of the chambers 40, 41, 42. Above the chamber 42, it is formed as a tab 50 for an opening. This tab 50 can



be broken open or broken off, as indicated by the break line 51. Naturally, the force required to break open the tab 50 along the break line 51 is greater than the force required to break open the seams 48, 52, 53 that separate the chambers 40-42.

[0054] In the embodiment of the container 60 illustrated in Figure 4, the chamber 61 again tapers to a point 68 and has breakable seams 62, 63 that separate the chambers 64, 65, which are provided with base parts 66, 67.

[0055] A fourth chamber 69 with a base part 70 is arranged opposite the chamber 61. The point 68 of the fourth chamber 69 coincides with the point 68 of the third chamber 61, so that together with the boat-shaped molded part 71, which closes the chamber 61 at the top, the two chambers 61, 69 with the breakable seams 62, 63 and 72, 73 form a structure with the shape of an hourglass. In this container 60 as well, the base parts 66, 67, 70 can be formed by a common, single-piece base.

[0056] The embodiments of containers illustrated in Figures 1-4 are formed symmetrically with respect to a center plane. The embodiment of the container 80 illustrated in Figure 5 does not have symmetry properties of this type.

[0057] In the container 80, two adjacent chambers 81, 82 are separated by the seams 85, 86 of a third chamber 83. The seams 85, 86 taper to a point 84, which continues in another seam 87, which forms a node with the facing points of the two base parts 88, 89 of the chambers 81, 82.

[0058] The chamber 81 is separated from another chamber 90 by a breakable seam 92. The chamber 90 also has a base part 91, which is formed by a single-piece base with the other base parts 88, 89.

[0059] A chamber 94, which is separated from chamber 82 by another breakable seam

93, is formed without a base part. The chamber 94 and the chambers 81, 82, 83 are closed at the top by boat-shaped sections 95-97, and the middle section 96, which closes the chamber 83, is provided with a reclosable spout 98.

[0060] The container 101 illustrated in Figures 6 and 7 has three adjacent chambers 102, 103, 104, which are separated from one another by breakable seams 105, 106.

[0061] If the container 101 is subjected to a load, e.g., by pressing or squeezing, the seams 105, 106 break open, and the contents of the chambers 102, 103, 104 can be mixed. The chambers 102, 103, 104 are bounded by a front and a rear plastic film, which are joined along their edges by an essentially peripheral seam 107, whose tear strength is significantly greater than that of the breakable seams 105, 106, so that there is no danger that this seam 107 will break open when a load is applied to the container 101.

[0062] Each of the three chambers 102-104 is closed at the bottom by a base part 108-110. Each base part 108-110 has a filling hole 111-113 for filling the corresponding chamber 102-104.

[0063] The base parts 108-110, which, as an example, are shown here separated from each other with respect to their peripheral edges, are arranged in a row supported on a common stand 114, which is formed here as a base plate 121 with an elongated oval shape and a suitable size and thus lends the container 101 a high degree of stability.

[0064] Since the base parts 108-110 and the stand 114 are formed as a single piece in this embodiment, the filling holes 111-113 also pass through the base plate 121 and can be sealed by vibration after the chambers 102-104 have been filled.

[0065] Alternatively, if the base parts and stand are formed separately, the filling holes of the base parts can also be closed by a continuous base plate 121 after the chambers 102-104

have been filled.

[0066] A stem 115-117 is additionally arranged between the stand 114 and the base parts 108-110. The stem 115-117 has a cylindrical cross section, which is recessed relative to the corresponding base part 108-110. These stems 115-117 provide a place for fork-like or tong-like gripping devices to grip and hold the container 101 during a filling operation. For this reason, it is advantageous for each stem 115-117 to be free of a film that bounds the chambers 102-104.

[0067] As viewed from above, the base parts 108-110 have a boat-like or wedge-like shape and thus taper into two opposite points. The points of two adjacent base parts can be connected with each other or, as shown in the illustrated embodiment, they can be separated from each other. As a consequence, the films that bound the chambers 102-104 can be directly welded together here over the free space between two adjacent points.

[0068] In a side view, as shown, say, in Figure 7, it is apparent that in this embodiment, the three chambers 102-104 have an essentially triangular shape. The middle chamber 103 has a vertex that points in the direction of the stand 114 and is closed by the base part 109. The two outer chambers 102, 104 adjacent to the middle chamber 103 also have an approximately triangular shape with their vertices formed above the stand 114 but resting against the middle chamber 103 by the seams 105, 106 and the seam 107.

[0069] At the top, the triangularly shaped middle chamber 103 has a relatively long side. The opposite seams 107 of the front and rear films that form the chamber 103 enclose an insert 118 there, which in a top view is again wedge-shaped or boat-shaped, tapers into two opposite points, and is formed as a spout 119 with, for example, a tip 120 that can be cut off.

[0070] Another embodiment of a container 122 is explained in detail with reference to

Figures 8-13.

[0071] The container 122 is illustrated here, as an example, with two chambers 124, 125 that are separated by a breakable seam 123. Two base parts 126, 127 (cf. also Figure 4) with filling holes 128, 129 close the chambers 124, 125 at the bottom.

[0072] The base parts 126, 127, which again have a wedge-like shape, are joined by a web 130, which is joined to circular stems 131, 132 with recessed cross sections.

[0073] The web 130 is located below a film 133, which bounds the chambers 124, 125 and is joined with the base parts 126, 126 by a seam 134 that cannot be torn open. The web 130 is thus freely accessible. Consequently, adapters 135, shown here in the form of recesses with square cross sections, can be provided on the web 130 for a gripping device, which grips the adapters 135 of the web 130 for filling the chambers 124 and 125, holds the container 122, and thus allows machine filling through the fillings holes 128 and 129.

[0074] The two chambers 124, 125 with the base parts 126, 127, which are formed separately from each other and are joined by the web 130, are held by a stand 136. The stand 136 has a two-part design with a base plate 137 and a connecting piece 138. The connecting piece 138 has two receiving holes 139, 140 for holding the stems 131, 132 of the base parts 126, 127 fluid-tight. The hole 139 is formed as a blind hole, so that the filling hole 128 can be closed.

[0075] On the other hand, the receiving hole 140 connects the filling hole 129 of the base part 127 with a spout 141, cf. Figure 12, so that, for example, liquids mixed in the chambers 124, 125 can be removed as a mixture from the chambers 124, 125.

[0076] The base plate 137 serves as a closure for the spout 141. For this purpose, the base plate 137 has a centrally arranged sealing mount or a stopper 142 for the spout 141.